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EXAMINER	
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ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing.US@motorola.com

Office Action Summary	Application No.	Applicant(s)	
	10/678,674	RAKIB ET AL.	
	Examiner	Art Unit	
	Ryan Stronczer	2425	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 1 and 3-23 in the reply filed on 03 November 2008 is acknowledged; however, since in the previous Office Action the Examiner considered claims 1 and 3-29 to read on the elected invention, claims 24-29 will not be withdrawn and will henceforth be considered part of the elected invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 4, 10, 11, 18, 19, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. (US Pub. No. 2002/0067376) in view of Hendricks et al. (US Pat. No. 5,990,927), Fellows et al. (DOCSIS Cable Modem Technology), and Hoshen et al. (Pub. No.: US 2002/0154892).

Claim 1:

Martin discloses a digital single tuner set top decoder (STB), as recited, comprising:

[1] one or more data paths <u>comprising at least one</u> bus for coupling to a control circuit and hereafter referred to as a bus *(shown as lines connecting the*

components of the set top box 1140 in fig. 3a, wherein "Host CPU + Memory" 220 in fig. 3a is the control circuit);

[2] a frequency nimble QAM channel tuner having a control input coupled to said bus, and having an input for coupling to a coaxial cable of a cable TV system *(Martin discloses a QAM Tuner 242 in fig. 3a; in [0050] Martin discloses that the tuner may be QAM, which tunes to a channel requested by a user. The tuner coupled to the control circuit as shown in fig. 3a, meeting the limitation "having a control input coupled to said bus"; also see "If the access information not included in the configuration data, STB 1140 would have to tune to the transport data" in [0065], wherein the act of tuning to the transport data also means that the tuner is frequency nimble. Martin further discloses a cable interface 224 in fig. 3a for receiving data from the headend (see [0068]) via a hybrid fiber coax (see [0034]), therefore meeting the limitation of "having an input for coupling to coaxial cable of a cable TV system");*

[3] quadrature amplitude (QAM) demodulator coupled to receive signals output by said tuner for recovering data of a transport stream or multiplex therefrom *(shown by Martin as Demodulator FEC 244 in fig. 3a)*

As to the recited "**[4] a transport stream demultiplexer coupled to receive filter instructions from said bus for extracting and outputting packets having selected PIDs from said transport stream or multiplex including at packets having a DOCSIS PID, and routing said extracted packets to circuits <u>for processing the packets based on packet</u> type**," Fig. 3a of Martin teaches a Demultiplexer/ Descrambler 240. Martin further teaches filtering only *"packets having a matching PID"*

(see [0035] and [0057], where a plurality of audio and/or visual data streams may be carried on a single frequency channel and would require filtering of packets). Martin also discloses that packets containing audio and video are routed to the appropriate audio and video decoders (see [0051]); however, Martin does not explicitly teach the recited "packets having a DOCSIS PID." In an analogous art, Fellows discloses that the value 0x1FFE is the DOCSIS standard PID "for all [cable modem] traffic on that channel" (pg. 205, col. 1). As DOCSIS is an international industry standard, it would have been obvious to one of ordinary skill in the art at the time of the invention for the PID-based packet filtering taught by Martin to include recognizing the DOCSIS PID taught by Fellows. One of ordinary skill in the art at the time of the invention would have recognized this as a combination of known elements in the art that would have yielded predictable results.

Martin further teaches the recited **[5] a conditional access means** *(see Fig. 3a, Conditional Access 238, Smartcard Reader 234, and Smart Card 236)* **for receiving a decrypted session key** *(see "control words (keys)" in [0047])* **and encrypted packets** *("encrypted broadcast signals" in [0049], wherein the encrypted broadcast signals contain MPEG packets)* **sent to said conditional access means by said transport stream multiplexer** *(Fig. 3a, Demultiplexer/Descrambler 240)* **and for decrypting some of said encrypted packets using said session key to recover a working key and using said working key to decrypt encrypted packets of said requested program** *(this is inherent to Martins invention as a control word is transmitted with scrambled signals, wherein this control word is the session key. Furthermore, the smart*

card determines whether it has rights to access the program—implying that a user key is present and used. If the smart card does have rights then the ECM is deciphered and a control word is delivered to the descrambler, wherein this control word is the working key, see [0047] and [0053])

[6] decompression means coupled to receive decrypted video packets from said conditional access means and audio and other packets that comprise said requested program, for decompressing and decoding said packets so as to output YUV or RGB information and properly synchronized audio information *(disclosed as Audio Decoder 246 and Video Decoder 248 in fig. 3a. wherein the audio and video decoders receive decrypted packets from conditional access means 238 via demultiplexer/descrambler 240 in fig. 3a, see also "supply the necessary control word to a demultiplexer/descrambler 240" in [0049]);*

and **[7] an encoder means for receiving said YUV or RGB information and generating a video signal therefrom** *(disclosed as NTSC/SECAM/PAL Encoder 254 in fig. 3a)*.

Martin does not explicitly teach the recited "**[8] remodulation circuit for receiving said video signal from said encoder and for receiving an audio signal, and for modulating said video and audio signals onto a radio frequency carrier having a predetermined frequency.**" In an analogous art, Hendricks teaches a set top box (Fig. 4, 220) which includes a remodulation circuit (Fig. 4, RF Modul. 605) for receiving said video signal from said encoder (Fig. 4, NTSC encoder 625) and for receiving an audio signal (Fig. 4, Audio Decompr. 612), and for modulating said video

and audio signals onto a radio frequency carrier having a predetermined frequency (channel 3 or channel 4 TV carrier, see col. 25/line 40-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the set top box decoder of Martin with the remodulation circuit of Hendricks fro the benefit of enabling the set top box to support legacy televisions that only have a coaxial RF input. One of ordinary skill in the art at the time of the invention would have recognized this as a combination of known elements in the art that would have yielded predictable results.

Martin further teaches the recited **[9] a control circuit for receiving user commands and controlling said set top box by communicating with selected circuits in said set top box via said bus or other data paths** *(shown as Control Unit 232, wherein the control unit receives control commands from a user and communicates with a tuner for example to cause the tuner to change to a channel requested by a user, see [0059])*;

[10] a memory coupled to said control circuit for storing packets routed thereto by said transport stream demultiplexer *(Martin discloses Host CPU + Memory 220 in fig. 3a, wherein the memory stores application programs which may be broadcast by the headend, see [0055], wherein the applications are transmitted in data packets, see [0056]);*

and [11] key store means for storing a private user key of said set top decoder in nonvolatile memory and decrypting a session key in an EMM message using said private user key *(the Smartcard 236 shown in fig. 3b inherently has a key store means to perform the function of decrypting a session key (control word) in an*

EMM message as shown in fig. 3B and discussed in [0053] and storing this session key for the duration of a VOD or PPV session).

As to the recited "**[12] DOCSIS upstream transmitter coupled to said control circuit by said bus,**" though the recited upstream transmitter is not explicitly taught by Martin or Hendricks, Fellows teaches a DOCSIS upstream channel for supporting communication from the cable modem to the head-end (see, e.g., pg. 202, col. 2 and pg. 204 col. 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the set top box of Martin and Hendricks to include a DOCSIS upstream transmitter coupled to the control circuit for the benefit of having a set top box comply with the DOCSIS standard and for simplifying the fabrication cost of set top box by eliminating the need for other components, such as telephone modems, that enable a two way communication between the head-end and the customer. One of ordinary skill in the art at the time of the invention would have recognized this as a combination of known elements in the art that would have yielded predictable results.

As to the amended limitation that "**said DOCSIS upstream transmitter [is] configured to transmit management and control (M&C) data from the set top decoder to a headend by way of said coaxial cable**," though Fellows teaches that the DOCSIS modem has a return path transmitter for sending upstream signals, it does not explicitly teach the recited M&C data send to a headend. In an analogous art, Fig. 12 of Hoshen teaches a method for sending an upstream request for content from a user's STB to a headend using the DOCSIS standard. Hoshen teaches:

> When any subscriber pages the EPG and selects a title (step 141 in FIG. 12), whether this subscriber uses STB 10 or SSTB 20, a request (step 142) is

> issued and transmitted via the upstream interactive channel to the Management System 57 using any conventional standard (i.e., ETS-300-800 or DOCSIS). The Management System 57 registers the request (step 143) for billing, statistics, and maintenance purposes and instructs one selected SSTB to stream the requested title to the ordering subscriber… [0164]

The request sent to the management system taught by Hoshen is equivalent to the M&C data transmitted to a headend, as recited. As Hoshen teaches that said upstream request can be sent using the DOCSIS standard, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the DOCSIS upstream transmitter taught by Fellows to transmit the request taught by Hoshen. One of ordinary skill in the art at the time of the invention would have recognized this as a combination of known elements in the art that would have yielded predictable results.

Claim 3:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Martin discloses wherein control circuit includes means to receive requests for encrypted programs and to send an upstream message requesting transmission (see backchannel 1240 and cable modem 226 and "demand authorization to watch a particular event (which reads on requesting a control word/key)...communicate purchase data, request information" in [0048] and [0049]) of a session key needed to decrypt a working key transmitted with said requested program and to receive a downstream message containing the encrypted session key and decrypt said session key with a private user key and then use the decrypted session key to decrypt a working key transmitted with the encrypted program data and use the decrypted working key to

decrypt the encrypted program data (see “control words (keys) that are transmitted with scrambled signals” and “ciphered ECMs and EMMs so that control words for descrambling may be recovered” in [0047]). Martin explicitly/implicitly discloses the limitations of claim 3.

Claim 4:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Martin discloses wherein said key store means contains a nonvolatile memory with stores said private user key (as discussed in the rejection of claim 1, the Smartcard 236 shown in fig. 3b inherently has a key store means to perform the function of decrypting a session key (control word) in an EMM message as shown in fig. 3B and discussed in [0047] and [0053]) and contains a secure microprocessor (a secure microprocessor is inherent to a smart card in order for the smart card to process encryption data. Further, the conditional access system decrypts keys only when the conditional access system is authorized to do so as determined by an EMM message sent to the STB, see [0047]) which is programmed to use said private user key to decrypt a session key in EMM message bearing MPEG packet (see “MPEG-2 data stream” in [0053]) routed to said secure microprocessor by said transport stream demultiplexer, and programmed to use said decrypted session key to decrypt ECM messages in MPEG packets extracted by said transport stream demultiplexer and sent to said secure microprocessor so as to recover a working key, and programmed to send said working key to said conditional access means, and wherein said removable card

(Martin discloses “inserted” subscription card 236, which means that the smart card is removable) is connected to the rest of the circuitry of said set top decoder by an edge connector or a series of conductive contact pads with mate with conductors which touch said pads when said card is seated in said set top decoder (Further, having the removable smart card “connected to the rest of the circuitry of said set top decoder by an edge connector or a series of conductive contact pads with mate with conductors which touch said pads when said card is seated in said set top decoder” is implicitly disclosed by Martin, moreover, the Open Cable standard architecture incorporated by reference in the applicant's specification dictates that a smart card have “a series of conductive contact pads with mate with conductors which touch said pads when said card is seated in said set top decoder” and it would have been necessary for a smart card to have those featured so as to comply with the open cable standard).

Claim 10:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Martin, Hendricks, and Fellows disclose wherein said control circuit is a microprocessor programmed to receive MPEG packets having the DOCSIS PID which contain a channel lineup table which contains all information needed to determine all necessary information to tune to a digital video broadcast table including the PIDs of at least channels to which said set top decoder has a subscription (see Martin, EPG in [0091] and PID in [0035] and “Conditional Access Table”, “Program Association Table” and Program Map Table” in [0036]-[0038]), and is further programmed to reconstruct

said channel lineup table and search said channel lineup table for the channel for which a request to view has been received from a user (this is inherent to the EPG and the PAT, PMT, CAT disclosed by Martin) and determine the PIDs of video, audio, PCR and other components of said requested channel and use said PID information to program said transport stream demultiplexer (Martin discloses filtering only "packets having a matching PID" (see [0035] and [0057, where a plurality of audio and/or visual data streams may be carried on a single frequency channel and would require filtering of packets). Martin also discloses that packets containing audio and video are routed to the appropriate audio and video decoders (see [0051])) and use other information gleaned from said channel lineup table to send appropriate commands to said tuner and said quadrature amplitude demodulator to properly receive said requested channel (sending appropriate commands to a tuner/demodulator to receive a requested channel is inherent to the invention of Martin as the tuner is frequency nimble and not fixed, see “If the access information not included in the configuration data, STB 1140 would have to tune to the transport data” in [0065]);

Claim 11:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Martin, Hendricks, and Fellows explicitly/implicitly disclose all the limitation of claim 11. Claim 11 is rejected for the same reasons as in claims 1, 3, and 4.

Claim 18:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1, as discussed previously.

Further Martin discloses wherein said control circuit is a microprocessor (see Host CPU Memory 220 in fig. 3a) programmed to execute a resident operating system (see operating system in [0054] and navigation program (see "portal" and "navigate" in [0005]) and programmed to request download of any other application program needed to carry out any function requested by a user which cannot be performed by said navigation program (see "enable a user to communicate immediately with the headend to…download an application…request information" via "back channel 1240", wherein the user request to the headend is inherently controlled by the microprocessor, see connection between CPU 220 and Modem 226 in fig. 3a).

Claim 19:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Martin, Hendricks, and Fellows explicitly/implicitly disclose all the limitation of claim 19. Claim 19 is rejected for the same reasons as in claims 1, 3, and 4.

Claim 20:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Martin, Hendricks, and Fellows explicitly/implicitly disclose all the limitation of claim 20. Claim 20 is rejected for the same reasons as in claims 1, 3, and 4. See

Martin "program association table (PAT)" and Program map table (PMT)" in [0036], [0037], and [0041]. Further Martin discloses PAT tables which inherently have PID 0.

Claim 21:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Martin, Hendricks, and Fellows explicitly/implicitly disclose all the limitation of claim 21. Claim 21 is rejected for the same reasons as in claims 1, 3, and 4. See Martin "see enable the user to communicate with the headend to demand authorization to watch a particular event" via a back channel in [0048] wherein the authorization is a control word (key) sent in an EMM message with a PID to the user, see PID in [0035] and description of PMT, PAT, CAT, NIT tables and how they relate to the PIDs, see [0036] – [0041]. Further Fellows discloses DOCSIS PIDs as disclosed in the rejection of claim 1. The ask and receive key exchange disclosed by Martin, Hendricks, and Fellows reads on the claim limitation "DOCSIS key exchange".

Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Hendricks in further view of Fellows in even further view of Duffield (US Pub. No. 2004/0210924).

Claims 22:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously.

Further Martin Hendricks, and Fellows disclose receiving EMM messages containing a session key corresponding to a requested video using a private user key for said STB (see Martin, “control words (session keys) that are transmitted with scrambled signals” and “ciphered ECMs and EMMs so that control words for descrambling may be recovered” in [0047]; see “backchannel 1240” and “cable modem 226” and "demand authorization to watch a particular event (which reads on requesting a control word/key) in [0048] and [0049]). Further, Martin discloses that the smart card determines whether it has rights to access the program (implying that a user key/user identification is present and used). If the smart card does have rights then the ECM is deciphered and a control word is delivered to the descrambler, wherein this control word is the working key, see [0047] and [0053]).

Fellows discloses a DOCSIS PID as discussed in the rejection of claim 1 (see Fellows, “0x1FFE” on p. 205 col. 1 ll. pp. 2).

Neither Martin nor Hendricks nor Fellows disclose that EMM messages are sent on a data carousel or that the control circuit is programmed to receive EMM messages and select only EMM messages having the address or ID of said STB.

Duffield, an inventor from the same or a similar field, discloses that EMM messages are sent on a data carousel (see [0022]) and that the control circuit of each STB is

programmed to receive EMM messages and select only EMM messages having the address or ID of said STB (see 10,000 subscribers of the given system, the carousel must deliver 10,000 EMMs in a given cycle (wherein each STB has an EMM inherently addressed to that STB), see [0007]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Martin, Hendricks, and Fellows to have the "control circuit is programmed to receive EMM messages as a data carousel on the DOCSIS PID and select only EMM messages having the address or ID of said STB" for the benefit of maximizing the ability of STB to receive data, as disclosed by Duffield (see [0007]).

Claim 23:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Further, Martin, Hendricks, Fellows, and Duffield explicitly/implicitly disclose all the limitation of claim 23. Claim 23 is rejected for the same reasons as in claims 1 and 22. Further sending an encrypted session key to a key store means for decryption using a private key for a STB is inherent to the invention of Martin for the proper viewing of encrypted programming to which a user has access to, see Martin "control words (keys) that are transmitted with scrambled signals" and "ciphered ECMs and EMMs so that control words for descrambling may be recovered" in [0047]). Further, Martin discloses that the smart card determines whether it has rights to access the program

(implying that a user key/user identification is present and used). If the smart card does have rights then the ECM is deciphered and a control word is delivered to the descrambler, wherein this control word is the working key, see [0047] and [0053]). The Smartcard 236 shown in fig. 3b inherently has a key store means to perform the function of decrypting a session key (control word) in an EMM message as shown in fig. 3B and discussed in [0053] and for storing this session key for the duration of a VOD or PPV session); and

Claims 5, 6, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. (hereinafter referred to as Martin) (US Pub. No. 2002/0067376) in view of Hendricks et al. (hereinafter referred to as Hendricks) (US Pat. No. 5,990,927) in further view of Fellows et al. (hereinafter referred to as Fellows) (DOCSIS Cable Modem Technology) in even further view of Hoogenboom (US Pat. No. 5,566,089) in even further View of Eng (US Pub. No. 2007/0140298).

Claim 5:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Martin, Hendricks, and Fellows discloses wherein said control circuit is a microprocessor programmed to receive requests for a broadcast channel or a video-on-demand program or a pay-per-view event, and generate and send upstream requests (see Martin, “backchannel 1240” and “cable modem 226” and "demand authorization to watch a particular even...communicate purchase data, request information" in [0048]

and [0049]) via said DOCSIS upstream transmitter (Fellows discloses a DOCSIS upstream transmitter as disclosed in the rejection of claim 1) to download any application programs needed and to download any decryption keys needed to decrypt said requested program and wherein said upstream messages include an indication of the QAM channel(s) on which said set top decoder is tuned to receive downstream data.

Neither Martin nor Hendricks nor Fellows disclose "to send an I-frame immediately" or "receiving downstream M&C messages such that said headend can narrowcast M&C messages to only the cable modems that need them thereby minimizing the number of QAM channels on which downstream messages must be sent"

Hoogenboom, an inventor from the same or a similar field, discloses that I frames must be received before decoding predictive frames (such as P or B frames) and that I frames provide random access entry points into a video sequence (see col. 2 ll. 27-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Martin, Hendricks, and Fellows to "send an I-frame immediately" for the benefit of enabling the user to be able to decode received P and B frames correctly and for providing immediate access to a video stream via a random access point, as disclosed by Hoogenboom.

Neither Martin nor Hendricks nor Fellows nor Hoogenboom disclose “receiving downstream M&C messages such that said headend can narrowcast M&C messages to only the cable modems that need them thereby minimizing the number of QAM channels on which downstream messages must be sent”

Eng, an inventor from the same or similar field, discloses a cable modem termination system (at the headend) programmed to receive data and to carry out DOCSIS processing to generate MPEG packets having a DOCSIS PID and having management and control data encapsulated therein (CMTS 124 paragraph [0042] also exhibited on fig 1) and a computer executing a transport multiplexer process and programmed to receive MPEG packets containing the requested services and said MPEG packets having said DOCSIS PID and for combining said MPEG packets into one or more MPEG transport streams comprising an MPEG multiplex (Downstream Xmitter 132 and 142; paragraphs [0021] and [0043] also exhibited on fig 1), wherein the transport stream contains audio/video/data sent to a cable modem (see [0051]). Further, Eng discloses channel identifiers in upstream and downstream messages (for example downstream channel identifier 588 and upstream channel identifier 708 for transmitting M&C data, see Eng [0060] - [0066], the channel identifiers meet the claim limitation “and wherein said upstream messages include an indication of the QAM channel(s) on which said set top decoder is tuned to receive downstream M&C messages such that said headend can narrowcast M&C messages to only the cable modems that need them thereby

minimizing the number of QAM channels on which downstream messages must be sent".

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the set top decoder apparatus of Martin, Hendricks, Fellows, and Hoogenboom to receive management and control data from a headend via packets transmitted as part of said transport stream containing one or more video programs according to Eng for the benefit of enabling a multi-channel full-service MAC domain to facilitate sharing of a number of channels and to enable a packet-by-packet true seamless channel change, as disclosed by Eng (see Abstract).

Claim 6:

Martin, Hendricks, Fellows, and Hoogenboom disclose the apparatus of claim 5 as discussed previously. Martin, Hendricks, and Fellows discloses wherein said microprocessor is programmed to receive MPEG packets (see Martin, "MPEG-2 data stream" in [0053]) having the DOCSIS PID (see Fellows, "0x1FFE" on p. 205 col. 1 ll. pp. 2) and extract management and control messages and data therefrom including application programs and programmed to install on said microprocessor any said application program needed to do any necessary processing in said set top decoder for functions for which the software is not resident and execute said program.

Claim 12:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Martin, Hendricks, and Fellows disclose wherein said control circuit is a microprocessor programmed to receive a request for a VOD program(s) and generate and send via said DOCSIS upstream transmitter a request to download only the conditional access key(s) needed to decrypt the requested VOD program(s) and download of the MPEG data of the program and any application program software needed to service the request (see Martin, backchannel 1240 and cable modem 226 and "demand authorization to watch a particular event (which reads on requesting a control word/key)...communicate purchase data, request information" in [0048] and [0049]; also see "video on demand" in [0107])

Neither Martin nor Hendricks nor Fellows disclose “and wherein said microprocessor is further programmed to request immediate download of an MPEG I-frame for the requested program such that decoding of the requested program data in the Decompression means can begin immediately upon receipt of the I-frame and the rest of the MPEG data of the program does not have to wait for the I-frame for the program to come in the natural order of the MPEG transport stream"

Hoogenboom, an inventor from the same or a similar field, discloses that I frames must be received before decoding predictive frames (such as P or B frames) and that I frames provide random access entry points into a video sequence (see col. 2 ll. 27-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Martin, Hendricks, and Fellows to "have the microprocessor programmed to request immediate download of an MPEG I-frame for the requested program such that decoding of the requested program data in the Decompression means can begin immediately upon receipt of the I-frame and the rest of the MPEG data of the program does not have to wait for the I-frame for the program to come in the natural order of the MPEG transport stream" for the benefit of enabling the user to be able to decode received P and B frames correctly and for providing immediate access to a video stream via a random access point I frame, as disclosed by Hoogenboom.

Claim 14:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1, as discussed previously. Further Martin, Hendricks, and Fellows explicitly/implicitly disclose the limitations of claim 14. disclose the apparatus of claim 7 as discussed previously. Therefore, claim 14 is rejected for the same reasons as claims 1 and 12.

Claim 7, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Hendricks in further view of Fellows in even further view of Eng (US Pub. No. 2007/0140298).

Claim 7:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously.

Martin, Hendricks, and Fellows disclose

receive user commands including commands to view digital video broadcast channel lineups or video-on-demand menus (see Martin, “sub-portal such as VOD navigator and EPG in [0091] and “user inputs a command for accessing the portal [0060]);

receive and display channel lineup data and/or video-on-demand menus, and navigate on on-screen menus, channel lineup tables etc. in response to user commands, and receive user selection commands such as requests to view particular video broadcast channels or view particular video-on-demand selections (see Martin, “sub-portal such as VOD navigator and EPG in [0091] and “user inputs a command for accessing the portal [0060]);

requests for conditional access keys for selected programs, requests to download software applications needed to provide various services (see Martin, “sub-portal such as VOD navigator and EPG in [0091] and “user inputs a command for accessing the portal [0060]) and indicating to which QAM channel the STB is tuned (this is inherent in

order for the STB to receive requested programming from the head-end on the proper QAM channel)

receive downstream messages on the DOCSIS PID in an MPEG transport stream and recover the data therein (see Fellows, DOCSIS PID "0x1FFE" on p. 205 col. 1 ll. pp. 2);

receive requested software applications transmitted in MPEG packets having the DOCSIS PID and recover and install them (see Martin "software programs" in [0035]);

search the channel lineup table using data regarding a user selection of a broadcast channel to find a corresponding mapping entry for the selected video broadcast and gather data regarding which QAM channel the requested digital video broadcast will be on and what will be the PIDs of its video, audio, PCR timing, supplemental data, ECM message and, in some embodiments, the EMM message carrying the session key for the selected channel or program (Martin discloses a user selecting a channel from a channel lineup, see Martin, "sub-portal such as VOD navigator and EPG in [0091] and "user inputs a command for accessing the portal [0060]). Further "gather data regarding which QAM channel the requested digital video broadcast will be on and what will be the PIDs of its video, audio, PCR timing, supplemental data, ECM message and, in some embodiments, the EMM message carrying the session key for the selected channel or program" is inherent for the proper reception/decoding of the program (see

Martin “digital audio and video data” and “PID” in [0035], see PCR [0063], see EMM and ECM [0047]);

receive and recover the data from downstream messages on the DOCSIS PID in response to upstream VOD requests, said downstream messages indicating the QAM channel on which said VOD request will be sent, the transport stream on which said VOD request will be sent and information from which the PIDS of the component parts of said requested VOD program can be obtained directly or indirectly (see Martin “digital audio and video data” and “PID” in [0035], see PCR [0063], see EMM and ECM [0047]) (Martin discloses a user selecting a channel from a channel lineup, see Martin, “sub-portal such as VOD navigator and EPG in [0091] and “user inputs a command for accessing the portal [0060]).;

perform all necessary functions to send tuning commands and any other data needed to cause said tuner to tune and receive the appropriate QAM channel containing the requested program (this is inherent for the proper tuning of a channel to receive programming);

send appropriate configuration data to said QAM demodulator so that it can demodulate, deinterleave and error correct the received data of an MPEG multiplex or transport stream sent on a QAM channel (see Martin, demodulator 244 (e.g., a 256 QAM demodulator in [0050]; demultiplexer/descrambler 240 demultiplexes (or

deinterleaves) the data; further the demodulator 244 performs forward error correction or FEC, see fig. 3a) ;

determine the PIDs of the component parts of the requested video program including at least the video, audio, and PCR timing, and the ECM message data or attribute if said ECM message is sent as part of the video program (see Martin “digital audio and video data” and “PID” in [0035], see PCR [0063], see EMM and ECM [0047]);

receive EMM messages containing encrypted session keys and addressed or encrypted so that only said STB which sent said upstream request for a video program can decrypt them using a private user key of said STB, and either decrypt said session key using said private user key or send the EMM messages to key store means for decryption so as to obtain a decrypted session key (Martin discloses receiving an encrypted session key (see “decrypts the control word (session key)” in [0047]), wherein the control word is in ciphered (encrypted) EMM messages, see [0047]) and encrypted packets (“encrypted broadcast signals” in [0049]) having “the session keys addressed or encrypted so that only said STB which sent said upstream request for a video program can decrypt them using a private user key of said STB, and either decrypt said session key using said private user key or send the EMM messages to key store means for decryption so as to obtain a decrypted session key" is inherent to the invention of Martin, Hendricks, and Fellows because otherwise any subscriber can decode PPV material purchased by an individual, and thus, defeating the purpose of pay-per-view);

send the decrypted session key to appropriate circuitry for decryption of a working key in said ECM message or recover said working key in said control circuit using said decrypted session key and send said working key to said conditional access means (this is inherent to Martins invention as a control word is transmitted with scrambled signals, wherein this control word is the session key. Furthermore, the smart card determines whether it has rights to access the program (implying that a user key is present and used). If the smart card does have rights then the ECM is deciphered and a control word is delivered to the descrambler, wherein this control word is the working key, see [0047] and [0053]);; and

generate and send to said transport stream demultiplexer appropriate filter commands to cause MPEG packets and the DOCSIS PID to be selected from said MPEG multiplex and sent to said control circuit and to cause MPEG packets having the video PID to be extracted and sent to said conditional access means for decryption and to cause packets having the audio PID, PCR PID and supplemental data PID to be extracted and sent to the appropriate circuits for processing to decode said audio data and synchronize it with decoded video data, and to extract MPEG packets having a PID indicating they carry an EMM message and sent them to the appropriate circuit for decryption of the session key (Martin discloses “filtering” packets having a PID value matching a desired program, see [0035]; wherein audio and video packets are passed to dedicated audio and video processors/decoders, see [0051]; Martin also discloses

PCR is used for composite audio/video signals for synchronizing audio and video data during playback, see [0063]; Moreover, Martin discloses a conditional access system that decrypts video, wherein the conditional access system comprises a “conditional access” unit 238, a smartcard reader 234/smart card 236 and a Descrambler 240, see fig. 3a. Further Martin discloses PAT tables which inherently have PID 0. Martin explicitly/implicitly discloses the limitations of the claim.

Martin discloses sending upstream requests for video on demand programs and reports of channel selections for video broadcasts using modem 226 and backchannel 1240 see fig. 2, fig. 3a, also see [0048].

Fellows discloses a DOCSIS upstream channel for supporting communication from the cable modem to the head-end (see p. 202 col. 2 ll. 10-17, p.204 col. 2).

Neither Martin nor Hendricks nor Fellows disclose sending upstream management and control data.

Eng, an inventor from the same or similar field, discloses a cable modem programmed to receive to sending upstream management and control data (see “upstream MAC management burst packets 498 in fig. 2 which are sent upstream by fsCM 106 (cable modem), also see [0056].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the set top decoder apparatus of Martin, Hendricks, and Fellows to send upstream management and control data according to Eng for the benefit of enabling a multi-channel full-service MAC domain to facilitate sharing of a number of channels and to enable a packet-by-packet true seamless channel change, as disclosed by Eng (see Abstract).

Claim 8:

Martin, Hendricks, Fellows, and Eng disclose the apparatus of claim 7 as discussed previously. Regarding claim 8, Martin, Hendricks, Fellows, and Eng explicitly/implicitly disclose all the limitations of claim 8. Therefore, claim 8 is rejected for the same reasons as claims 1 and 7. See Martin "program association table (PAT)" and Program map table (PMT)" in [0036], [0037], and [0041]. Further Martin discloses PAT tables which inherently have PID 0.

Claim 9:

Martin, Hendricks, Fellows, and Eng disclose the apparatus of claim 8 as discussed previously. Regarding claim 9, Martin, Hendricks, Fellows, and Eng explicitly/implicitly disclose all the limitations of claim 9. Therefore, claim 9 is rejected for the same reasons as claims 1 and 7. See Martin "program association table (PAT)" and Program map table (PMT)" in [0036], [0037], and [0041]. see PCR [0063]. Further Martin discloses PAT tables which inherently have PID 0.

Claims 13, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Hendricks in further view of Fellows in even further view of Widmer et al. (hereinafter referred to as Widmer) (US Pat. No. 6,169,569).

Claim 13:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1, as discussed previously. Martin, Hendricks, and Fellows disclose wherein said tuner is structured such that it can be tuned to a frequency of a downstream channel on which an MPEG multiplex is modulated (see "plurality of frequency channels of a fixed and predetermined bandwidth" in [0057]; also see "changes to the frequency channel associated with the portal" in [0060], wherein the portal program is an MPEG multiplex, see [0063]).

Martin, Hendricks, and Fellows don't disclose "wherein the tuner filter out radio frequency signals outside said downstream channel, and reduce the frequency of the received signal to an intermediate frequency and digitize said intermediate frequency signal"

Widmer, an inventor from the same or a similar field, discloses wherein the tuner filter out radio frequency signals outside said downstream channel (see ADJ Band Pass

filters 60-1 to 60-3 in fig. 2 where the signal is filtered and limited to a 6 MHZ bandwidth, col. 3 ll. 13-32), and reduce the frequency of the received signal to an intermediate frequency (see the tuner 12 converts the RF signal to a first and a second IF signals (IF1 and IF2, wherein IF means intermediate frequency, see col. 3 ll. 12-32) and digitize said intermediate frequency signal (see "the resultant signal is passed to a demodulator 16, where and analog to digital (or "A/D") conversion of the signal…", col. 3 ll. 13-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Martin, Hendricks and Fellows to have the tuner "filter out radio frequency signals outside said downstream channel, and reduce the frequency of the received signal to an intermediate frequency and digitize said intermediate frequency signal" according to Widmer for the benefit of eliminating noise and receiving a better quality signal.

Claim 15:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 as discussed previously. Regarding claim 15, Martin, Hendricks, Fellows, and Widmer explicitly/implicitly disclose all the limitations of claim 15. Therefore, claim 15 is rejected for the same reasons as claims 1 and 13. See Widmer, "saw filter 14 where the signal is filtered and limited to a 6mhz bandwidth" in col. 3 ll. 20-30; noise outside the 6Mhz passband is excised).

Claim 17:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1, as discussed previously.

Neither Martin nor Hendricks nor Fellows disclose "wherein said tuner comprises: a gain control circuit controlled by commands received at said control input;
a broad bandpass filter coupled to receive signals output by said gain control circuit and filter out unwanted radio frequency signals outside a frequency band which includes said selected channel; a mixer and local oscillator coupled to mix output signals from said broad bandpass filter down to an intermediate frequency; a narrow passband filter controlled by said control circuit to have a passband bandwidth equal to the bandwidth of said selected channel; an analog-to-digital converter for digitizing the filtered signal output from said narrow passband filter"

Widmer, an inventor from the same or a similar field, discloses wherein said tuner comprises:

a gain control circuit controlled by commands received at said control input (disclosed as AGC circuit 56 in fig. 2)

a broad bandpass filter coupled to receive signals output by said gain control circuit and filter out unwanted radio frequency signals outside a frequency band which includes said selected channel (Widmer discloses a three ADJ Bandpass filters 60-1 to 60-3);

a mixer and local oscillator coupled to mix output signals from said broad bandpass filter down to an intermediate frequency (see mixers 66-1 to 66-3 and local oscillators 68-1 to 68-3);

a narrow passband filter controlled by said control circuit to have a passband bandwidth equal to the bandwidth of said selected channel (Widmer discloses a saw filter 14 which is equal to the bandwidth of the selected channel, or 6 MHz, see col. 3 ll. 13-45);

an analog-to-digital converter for digitizing the filtered signal output from said narrow passband filter (Widmer discloses that the Demodulator circuit digitizes the signal output by the saw filter (narrow bandpass filter, wherein the saw filter is different than the three bandpass filters in the tuner, See bandpass filters 60-1 to 60-3 in the tuner in fig. 2 and saw filter 14 in fig.1 which is receiving the IF from the tuner 12)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Martin, Hendricks and Fellows to have “wherein said tuner comprises: a gain control circuit controlled by commands received at said control input; a broad bandpass filter coupled to receive signals output by said gain

control circuit and filter out unwanted radio frequency signals outside a frequency band which includes said selected channel; a mixer and local oscillator coupled to mix output signals from said broad bandpass filter down to an intermediate frequency; a narrow passband filter controlled by said control circuit to have a passband bandwidth equal to the bandwidth of said selected channel; an analog-to-digital converter for digitizing the filtered signal output from said narrow passband filter" according to Widmer for the benefit of eliminating noise and receiving a better quality signal.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Hendricks in further view of Fellows in even further view of Cook et al. (hereinafter referred to as Cook) (US Pat. No. 6,950,145).

Claim 16:

Martin, Hendricks, and Fellows disclose the apparatus of claim 1 including a control circuit as discussed previously.

Neither Martin nor Hendricks nor Fellows disclose "includes a LOLA interface for detecting the digital broadcast channel a user wishes to view by receiving electromagnetic radiation from the local oscillator of a television set coupled to said STB"

Cook, an inventor from the same or a similar field, discloses includes a LOLA interface for detecting the digital broadcast channel a user wishes to view by receiving electromagnetic radiation from the local oscillator of a television set coupled to said STB

Cook teaches a process comprising the steps of:

I) determining the frequency generated by a local oscillator in an analog TV tuned to a particular requested analog TV channel (Col 2: lines 34-40, 46-52; Col 3: lines 60 - Col 4: line 19);

2) mapping said frequency to a corresponding digital video TV channel frequency (Col 2: lines 40-45, 51 -55; Col 4: lines 19-23);

3) using the information determined in step 2 to tune to the corresponding digital video *N* channel recover the signal on said digital video TV channel in step 2 (Col 2: line 30, 40-45, 51 -55; Col 4: lines 19-23);

4) converting the digital signal recovered in step 3 to an analog video signal and modulating said analog video signal onto an RF carrier having the frequency of said requested analog *N* channel (Col 2: lines 40-45, 51-55; Col 4. lines 24-28, 55-58).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Martin, Hendricks, and Fellows with the "LOLA interface for detecting the digital broadcast channel a user wishes to view by receiving electromagnetic radiation from the local oscillator of a television set coupled to said STB" according to Cook for the benefit of eliminating the use of multiple remote controls (e.g. one for the TV and one for the STB).

Claims 24 and 25 are is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin view of Hoarty et al. (US Pat No. 5,361,091), Fellows et al. (DOCSIS Cable Modem Technology), and Hoshen et al. (Pub. No.: US 2002/0154892).

Claim 24:

Martin discloses a set top decoder apparatus comprising:

[1] quadrature amplitude modulated channel radio frequency tuner having an input for coupled to a hybrid fiber coaxial cable system *(Martin discloses a QAM Tuner 242 in fig. 3a (in [0050] Martin discloses that the tuner may be QAM), wherein the tuner has an input for coupling to a hybrid fiber coax cable system, see [0034])*;

[2] a quadrature amplitude modulated channel digital demodulator coupled to receive digital sample data output from said tuner and functioning to recover MPEG packets *(Fig. 3a, Demodulator FEC 244, "encrypted broadcast signals" in [0049], wherein the encrypted broadcast signals contain MPEG packets)*;

[3] a transport stream demultiplexer coupled to receive packets output from said demodulator and functioning to extract packets having selected PIDs or other identifiers and route them to appropriate circuitry in said set top decoder for further processing *(Fig. 3a, Demultiplexer/Descrambler 240; Martin discloses filtering only "packets having a matching PID" (see [0035] and [0057, where a plurality of audio and/or visual data streams may be carried on a single frequency channel and would require filtering of packets. Martin further discloses that packets containing audio and video are routed to the appropriate audio and video decoders [0051])*;

[4] a decoder coupled to receive extracted compressed data packets from said transport stream demultiplexer for generating synchronized video and audio data of a requested video program *(Fig. 3a, Audio Decoder 246 and Video Decoder 248, wherein the audio and video decoders receive decrypted packets from conditional access means 238 via demultiplexer/descrambler 240. Martin further discloses that they "supply the necessary control word to a demultiplexer/descrambler 240" [0049]; The decoded video and audio data inherently being synchronized. Wherein the data is a requested video program, e.g. video on demand, see [0107])*;

[5] a microprocessor coupled at least to said transport stream demultiplexer and said tuner for controlling said set top decoder *(shown as Host CPU + Memory 220 in fig. 3a)*;

[6] means for receiving user commands and transferring data to said microprocessor *(shown as control unit 232 in fig. 3a)*.

As to the recited "**[7] an encoder to receive video data output by said decoder to generate video signals therefrom**," Fig. 3a of Martin teaches NTSC/SECAM/PAL Encoder 254; however, Martin does not explicitly disclose that the encoder receives audio data output by said decoder and generate audio signals therefrom. In an analogous art, Hoarty discloses an encoder to receive said video and audio data output by said decoder and generate video and audio signals therefrom (Fig. 14, shown as NTSC encoder 112 wherein the encoder clearly receiving video and audio data). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the set top box decoder apparatus of Martin with the encoder disclosed by Hoarty for the benefit of providing a broadcast quality video signal to the rest of the components in the set top box, as disclosed by Hoarty (see, e.g., col. 14/ lines. 60-67). One of ordinary skill in the art at the time of the invention would have recognized this as a combination of known elements in the art that would have yielded predictable results.

As to the amended limitation of a "**DOCSIS compatible cable modem bidirectionally coupled to said microprocessor and having an input for coupling to said hybrid fiber coaxial cable system and having a bus and/or local area network port, for sending and receiving broadband digital data and management and control (M & C) data over DOCSIS upstream and downstream channel on said hybrid fiber coaxial cable system**," Martin and Hoarty an apparatus including a microprocessor (Fig. 3a, Host CPU + Memory 220 in fig. 3a); the apparatus coupled to a hybrid fiber coaxial cable system (see [0034]) and having a bus (the bus is shown as

lines with arrows connecting the various components of the apparatus, as shown in fig. 3a. further the apparatus includes a cable interface 224 for interfacing with the hybrid fiber coaxial cable system) and/or local area network port for sending and receiving broadband digital data over an upstream and downstream channel on said hybrid fiber coaxial cable system (the apparatus in fig. 3a receives broadband digital data on a downstream channel via Cable interface 224, wherein the apparatus is the equivalent to the demodulator of a cable modem. Further, a cable modem 226 is included in the apparatus shown in fig. 3a for sending data over the hybrid fiber coaxial cable system via and upstream channel (disclosed as back channel 1240 in fig. 2); however, neither Martin nor Hoarty disclose that the cable modem is DOCSIS compatible or that the upstream and downstream channels are DOCSIS channels. In an analogous art, Fellows discloses receiving DOCSIS data on a downstream DOCSIS channel (see DOCSIS PID "0x1FFE" received by a STB on p. 205 col. 1) and a DOCSIS upstream channel for supporting communication from the cable modem to the head-end (see p. 202 col. 2 ll. 10-17, p.204 col. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the set top box of Martin and Hoarty to have the cable modem be DOCSIS compatible and having the upstream and downstream channels be DOCISIS channels for the benefit of having the set top box comply with the DOCSIS standard and for simplifying the fabrication cost of set top box by eliminating the need for other components, such as telephone modems and telephone service, that enable a two way communication between the head-end and the customer.

As to the amended limitation that said DOCSIS modem transmits management and control data over DOCSIS up- and downstream channels, though Fellows teaches that the DOCSIS modem has a return path transmitter for sending upstream signals, it does not explicitly teach the recited M&C data send to a headend. In an analogous art, Fig. 12 of Hoshen teaches a method for sending an upstream request for content from a user's STB to a headend using the DOCSIS standard. Hoshen teaches:

> When any subscriber pages the EPG and selects a title (step 141 in FIG. 12), whether this subscriber uses STB 10 or SSTB 20, a request (step 142) is issued and transmitted via the upstream interactive channel to the Management System 57 using any conventional standard (i.e., ETS-300-800 or DOCSIS). The Management System 57 registers the request (step 143) for billing, statistics, and maintenance purposes and instructs one selected SSTB to stream the requested title to the ordering subscriber… [0164]

The request sent to the management system taught by Hoshen is equivalent to the M&C data transmitted to a headend, as recited. As Hoshen teaches that said upstream request can be sent using the DOCSIS standard, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the DOCSIS upstream transmitter taught by Fellows to transmit the request taught by Hoshen. One of ordinary skill in the art at the time of the invention would have recognized this as a combination of known elements in the art that would have yielded predictable results.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Hoarty, Fellows, and Hoshen as applied to claim 24 above, and further in further view of Cook.

Claim 26:

As to claim 26, the rejection of claim 24 is incorporated herein; however, neither Martin nor Hoarty disclose "wherein said means for receiving user commands is a LOLA interface." In an analogous art, Cook discloses a receiving means for receiving user commands, where the receiving means comprises the steps of:

I) determining the frequency generated by a local oscillator in an analog TV tuned to a particular requested analog TV channel (Col 2: lines 34-40, 46-52; Col 3: lines 60 - Col 4: line 19);

2) mapping said frequency to a corresponding digital video TV channel frequency (Col 2: lines 40-45, 51 -55; Col 4: lines 19-23);

3) using the information determined in step 2 to tune to the corresponding digital video N channel recover the signal on said digital video TV channel in step 2 (Col 2: line 30, 40-45, 51 -55; Col 4: lines 19-23);

4) converting the digital signal recovered in step 3 to an analog video signal and modulating said analog video signal onto an RF carrier having the frequency of said requested analog N channel (Col 2: lines 40-45, 51-55; Col 4. lines 24-28, 55-58).

Wherein steps 1-4 read on the claim limitation "wherein said receiving means for receiving user commands is a LOLA interface"

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus including a receiving means of Martin and Hoarty to have the receiving means for receiving user commands be a "LOLA interface" as disclosed by Cook for the benefit of eliminating the use of multiple remote controls

(e.g. one for the TV and one for the STB) and simplifying the operation of multiple devices.

Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Hoarty, Fellows, and Hoshen as applied to claim 24 above, and further in further view of Hendricks.

Claim 27:

As to claim 27, the rejection of claim 24 is incorporated herein. Further, Hoarty discloses a remodulator coupled to receive said audio and video signals from said encoder and convert them to an RF carrier modulated with said audio and video signals (see RF Modulator 114 in fig. 14, wherein the modulator receives audio and video signals from NTSC encoder 112 in fig. 14); however, neither Martin nor Hoarty disclose that the remodulator is a channel 3 or channel 4 RF modulator. In an analogous art, Hendricks discloses a set top box (220 in fig. 4) which includes a remodulation circuit (RF Modul. 605 in fig. 4) for receiving said video signal from said encoder (an NTSC encoder 625 in fig. 4) and for receiving an audio signal (from Audio Decompr. 612 in fig. 4), and for modulating said video and audio signals onto a radio frequency carrier having a predetermined frequency (channel 3 or channel 4 TV carrier, see col. 25 ll. 40-42). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the set top box decoder of Martin and Hoarty with the remodulation circuit of Hendricks fro the benefit of enabling the set top box to support legacy televisions that only have a coaxial RF input.

Claim 28:

Regarding claim 28, the rejection of claim 24 is incorporated herein. Martin, Hoarty, Cook, and Hendricks explicitly/implicitly disclose all the limitations of claim 28. Therefore, claim 28 is rejected for the same reasons as claims 24, 26 (LOLA interface), and 27 (channel 3 or channel 4 remodulator).

1. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Hoarty, Fellows, Eng (US Pub. No. 2007/0140298), and Hoshen et al. (Pub. No.: US 2002/0154892).

Claim 29:

Martin discloses a set top decoder apparatus comprising:

a radio frequency tuner having an input for coupled to a hybrid fiber coaxial cable system Martin discloses a QAM Tuner 242 in fig. 3a (in [0050] Martin discloses that the tuner may be QAM), wherein the tuner has an input for coupling to a hybrid fiber coax cable system, see [0034]);;

a QAM channel digital demodulator coupled to receive digital sample data output from said tuner and functioning to recover packets (shown by Martin as Demodulator FEC 244 in fig. 3a) (“encrypted broadcast signals” in [0049], wherein the encrypted broadcast signals contain MPEG packets);

an transport stream demultiplexer coupled to receive packets output from said demodulator and functioning to extract packets having selected PIDs or other identifiers and route them to appropriate circuitry in said set top decoder for further processing (shown as Demultiplexer/Descrambler 240 in fig. 3a. Further, Martin discloses filtering only "packets having a matching PID" (see [0035] and [0057, where a plurality of audio and/or visual data streams may be carried on a single frequency channel and would require filtering of packets). Martin also discloses that packets containing audio and video are routed to the appropriate audio and video decoders (see [0051]);

a decompression decoder coupled to receive extracted packets from said transport stream demultiplexer and decompress them so as to generate synchronized video and audio data of a requested program (disclosed as Audio Decoder 246 and Video Decoder 248 in fig. 3a. wherein the audio and video decoders receive decrypted packets from conditional access means 238 via demultiplexer/descrambler 240 in fig. 3a, see also “supply the necessary control word to a demultiplexer/descrambler 240” in [0049]; The decoded video and audio data inherently being synchronized for proper viewing of the programming. Wherein the data is a requested video program, e.g. video on demand, see [0107]);

means for receiving user commands specifying desired video programs to view and transferring data to said microprocessor (disclosed as Control Unit 232 in fig. 3a, wherein the control unit is coupled to the Host CPU 220 in fig. 3a).

a cable modem (Set top box 1140 in fig. 3a is understood by the examiner to be equivalent to a demodulator of a cable modem because the set top box includes a "cable interface" and tunes/demodulates cable TV programming, further, a cable modem is connected to the CPU of set top box 1140 in fig. 3a so as to have back channel communication with the headend) having an input for coupling (see "Cable Interface" 224 in fig. 3a) to a hybrid fiber coaxial cable system (see hybrid fiber coax system" in [0034]) and having a bus (a bus is inherent and is depicted as the lines connecting the various components of the cable modem in fig. 3a) and/or local area network output for coupling to one or more computers or other devices which need to send and/or receive cable modem receive data on cable modem upstream and downstream channels (see "signals may also be provided to other devices…VCRs, PVRs, and computer equipment" in [0034] and "other devices" 1180 in fig. 2 connected to the set top box (IRD));

a microprocessor (Host CPU + Memory 220 in fig. 3a) coupled to a cable modem (Modem 226 in fig. 3a, also see "DAVIC based cable modem" in [0049]) and coupled at least to said transport stream demultiplexer (Demultiplexer/Descrambler 240 in fig. 3a) and said tuner (Tuner 242 in fig. 3a), for controlling said set top decoder to receive

requested video broadcasts and/or video-on-demand or pay-per-view programs (see “demand authorization to watch a particular event" in [0048] and [0049]); and

Martin discloses an encoder for converting said video data to video signals (see NTSC/SECAM/PAL Encoder 254 in fig. 3a for converting video data into video signals. Martin also discloses an Audio Decoder 246 in fig. 3a for converting audio data into audio signals.

Martin, however, doesn’t disclose that the encoder receives audio data and converts the audio data into audio signals.

Martin doesn’t disclose a DOCSIS compatible cable modem and therefore doesn’t disclose DOCSIS data or DOCSIS upstream and downstream channels.

Martin doesn’t disclose receiving management and control data from a headend via packets transmitted as part of said transport stream containing one or more video programs and for sending upstream management and control data via said DOCSIS compatible cable modem.

Hoarty, an inventor from the same or a similar field, discloses an encoder to receive said video and audio data output by said decoder and generate video and audio signals

therefrom (shown as NTSC encoder 112 in fig. 14, wherein the encoder clearly receiving video and audio data).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the set top box decoder apparatus of Martin with the encoder disclosed by Hoarty for the benefit of providing a broadcast quality video signal to the rest of the components in the set top box, as disclosed by Hoarty, see col. 14 ll. 60-67)

Neither Martin nor Hoarty disclose a DOCSIS compatible cable modem and therefore, neither Martin nor Hoarty disclose DOCSIS data or DOCSIS upstream and downstream channels.

Neither Martin nor Hoarty disclose receiving management and control data from a headend via packets transmitted as part of said transport stream containing one or more video programs and for sending upstream management and control data via said DOCSIS compatible cable modem.

Fellows, an inventor from the same or a similar field, discloses a DOCSIS compatible cable modem (disclosed as “CM” on page 202 col. 2 pp. 1), a DOCSIS PID (see “0x1FFE” on p. 205 col. 1 ll. pp. 2) and a DOCSIS downstream channel (disclosed as “forward channels” in p. 203 pp.3) and a DOCSIS upstream channel for supporting communication from the cable modem to the head-end (see “return channels” p. 202

col. 2 ll. 10-17, p.204 col. 2) for supporting DOCSIS data such as (audio, video, web, email, News, see Fig. 1 on p. 203; see MPEG-2 video and audio on p. 202 pp. 2). Fellows discloses that headend is programmed to perform conventional DOCSIS processing including conventional DOCSIS processing to exchange messages with DOCSIS compatible cable modem circuitry in each set top box coupled to a hybrid fiber coaxial cable system to cause said DOCSIS compatible cable modem circuitry to perform ranging and training to establish a pure DOCSIS upstream channel (Page 206; col. 1, Ranging and adjusting), said normal DOCSIS processing including establishing bandwidth request contention intervals by transmission of downstream MAP messages in MPEG packets having said DOCSIS PID and reception of upstream bandwidth request messages from said set top boxes during said bandwidth request contention intervals and processing said bandwidth request messages to award upstream minislots to specific set top boxes, therefore Fellows discloses “sending upstream management and control data via said DOCSIS compatible cable modem”.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the set top box of Martin and Hendricks to include a DOCSIS upstream transmitter coupled to the control circuit according to Fellows for the benefit of having a set top box comply with the DOCSIS standard and for simplifying the fabrication cost of set top box by eliminating the need for other components, such as telephone modems, that enable a two way communication between the head-end and the customer.

Neither Martin nor Hoarty nor Fellows disclose receiving management and control data from a headend via packets transmitted as part of said transport stream containing one or more video programs.

Eng, an inventor from the same or similar field, discloses a cable modem termination system (at the headend) programmed to receive data and to carry out DOCSIS processing to generate MPEG packets having a DOCSIS PID and having management and control data encapsulated therein (CMTS 124 paragraph [0042] also exhibited on fig 1) and a computer executing a transport multiplexer process and programmed to receive MPEG packets containing the requested services and said MPEG packets having said DOCSIS PID and for combining said MPEG packets into one or more MPEG transport streams comprising an MPEG multiplex (Downstream Xmitter 132 and 142; paragraphs [0021] and [0043] also exhibited on fig 1), wherein the transport stream contains audio/video/data sent to a cable modem (see [0051]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the set top decoder apparatus of Martin, Hoarty, and Fellows to receive management and control data from a headend via packets transmitted as part of said transport stream containing one or more video programs for the benefit of enabling a multi-channel full-service MAC domain to facilitate sharing of a number of

channels and to enable a packet-by-packet true seamless channel change, as disclosed by Eng (see Abstract).

As to the amended limitation that said DOCSIS modem transmits data **"including management and control (M&C) data on DOCSIS upstream and downstream channels,"** while Fellows teaches that the DOCSIS modem has a return path transmitter for sending upstream signals, it does not explicitly teach the recited M&C data send to a headend. In an analogous art, Fig. 12 of Hoshen teaches a method for sending an upstream request for content from a user's STB to a headend using the DOCSIS standard. Hoshen teaches:

> When any subscriber pages the EPG and selects a title (step 141 in FIG. 12), whether this subscriber uses STB 10 or SSTB 20, a request (step 142) is issued and transmitted via the upstream interactive channel to the Management System 57 using any conventional standard (i.e., ETS-300-800 or DOCSIS). The Management System 57 registers the request (step 143) for billing, statistics, and maintenance purposes and instructs one selected SSTB to stream the requested title to the ordering subscriber… [0164]

The request sent to the management system taught by Hoshen is equivalent to the M&C data transmitted to a headend, as recited. As Hoshen teaches that said upstream request can be sent using the DOCSIS standard, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the DOCSIS upstream transmitter taught by Fellows to transmit the request taught by Hoshen. One of ordinary skill in the art at the time of the invention would have recognized this as a combination of known elements in the art that would have yielded predictable results.

Response to Arguments

Applicant's arguments with respect to claims 1 and 3-29 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Stronczer whose telephone number is (571) 270-

3756. The examiner can normally be reached on 7:30 AM - 5:00 PM (EDT), Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian T. Pendleton can be reached on (571) 272-7527. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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